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## MEDICAL NEWS LETTER

Editor - Captain L. B. Marshall, MC, USN (RET)

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### Graduate Training in Navy Hospitals

Applications for assignment to residency training duty are desired from Regular medical officers and those Reserve medical officers who have completed their obligated service under the Universal Military Training and Service Act, as amended. The following chart lists those Navy hospitals which currently have vacancies at the first year level, and the specialties in which these vacancies exist. Vacancies are also available at other than first year levels. Information concerning non-first year appointments may be obtained by correspondence addressed to the Chief of the Bureau of Medicine and Surgery.

	Bethesda, Md.	Chelsea, Mass.	Oakland, Calif.	Philadelphia, Pa.	Portsmouth, Va.	San Diego, Calif.	St. Albans, N.Y.
Anesthesia	x	x	x				
General Practice		x			x		
Internal Medicine		x				x	
Neurology	x			x			
Orthopedics	x	x					
Otolaryngology			x	x			
Pathology	x		x	x		x	
Pediatrics			x				
Psychiatry	x		x	x			
Radiology	x	x	x			x	
Surgery					x	x	x
Urology						x	
Cardio-Vascular Diseases	x						

Letters of application for first year assignments should be forwarded via official channels to the Chief of the Bureau of Medicine and Surgery, and should include an obligated service agreement prepared in accordance with the provisions of BuMed Instruction 1520.7.

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### Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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### Naval Medical School

The Naval Medical School has from its inception in 1902 been organized to function as a postgraduate institution; however, due to its operative support position in the National Naval Medical Center and to the Navy at large, many special activities have been added from time to time. Among the more important divisions now a part of the School are the following:

#### Training (Officer Personnel)

Preventive Medicine: A five months refresher course in public health and preventive medicine, designed primarily for senior Flight Surgeons.

Blood Bank (Nurse Corps Officers): A three months course for Nurse Corps officers in blood bank technics.

Basic Sciences Course (Medical Officers): A comprehensive course, designed to meet the requirements of the various American Specialty Boards and the Council on Medical Education and Hospitals of the American Medical Association, for medical officers undergoing residency training, is maintained on a year around basis. This course includes the applied basic sciences along with anatomy, clinical biochemistry, physiology, bacteriology, pathology, and allied subjects.

Residencies (Pathology): Approved residencies in clinical pathology and pathological anatomy at the first, second, third, and fourth year levels.

Photofluorographic Interpretation: A course in photofluorographic interpretation of three months duration for medical officers.

Special Weapons Symposiums: The School conducts semiannual symposiums on the medical aspects of special weapons and radioactive isotopes and subjects of special interest to Reserve officers. These classes are of two weeks duration and are available to Regular and Reserve officers of the Armed Forces.

Radioactive Isotopes (Officers): A course in radioactive isotopes for officer personnel is now being organized.

Guest Lecture Series: Since 1933, the Naval Medical School has conducted a series of guest lectures each fall and winter season featuring distinguished speakers in the medical and other allied fields. These lectures, presented at monthly intervals, are followed by a social hour at which light refreshments are served. Usually well attended by Medical Department officers of the Washington area and their guests, the Guest Lectures have contributed in no small way toward better rapport between officers of the various corps of the Medical Department.

Correspondence Training: In addition to the courses listed above, the School maintains a correspondence training division. Originally created in the Bureau of Medicine and Surgery for the primary purpose of providing Medical Department Reserve personnel with necessary correspondence training facilities for earning promotion and retirement credits required by Public Law 810, its facilities have always been available to Regular Navy personnel. Enrollment of Regular Navy officers has increased since professional examination, or exemption by virtue of having completed certain study courses, was recently announced as a requirement for promotion. At present 2000 are enrolled, and the number from the Regular service approximates that of the Reserves. Fifteen correspondence courses are now available; all are of the objective type except two, and a number of new courses are being developed. All new courses will be of the objective type. Two courses on the Manual of the Medical Department will be available within three months and are expected to be especially well received.

#### Training (Enlisted Personnel)

The Naval Medical School conducts ten technical training courses for enlisted personnel. Primarily intended for members of the Navy Hospital Corps, these courses are in general well thought of and are, from time to time, attended by members of other branches of our own Armed Forces as well as by personnel from various foreign services. Currently, there are 200 students enrolled in the enlisted courses. The largest single group is that of the course in clinical laboratory and blood bank technic, which has

approximately 135 students who will be given a total of 14 months intensive training. Other courses consist of training in pharmacy, tissue bank, x-ray and photofluorographic technic, medical photography, chemistry, radioactive isotopes, physical medicine, occupational therapy, and optometric fabrication.

In addition to the courses listed above, in general all courses of the correspondence training division are available to enlisted personnel, Regular and Reserve, as well as to officers.

### Special Activities

Aside from the all-important training functions, the School supports numerous significant Medical Center activities. Its extensive general laboratories, which include facilities for pathology, parasitology, hematology, serology, bacteriology, entomology, epidemiology, physiological chemistry, general chemistry, blood collecting, and blood bank, support the adjoining Naval Hospital by providing complete clinical laboratory service.

Another special service embraces specialized laboratory procedures including toxicological examinations and pathological studies for the entire Naval Establishment. The School's laboratories are also equipped to prepare certain biological and chemical agents. Presumptive and standard Kahn antigens, diagnostic bacterial antigens, and colloidal gold solutions are produced for distribution on request to all Naval medical activities.

Edward Rhodes Stitt Medical Library: In September of 1950, the then well established Medical School Library was officially designated as the Edward Rhodes Stitt Library, in honor of the distinguished Rear Admiral Stitt, Surgeon General from 1920 to 1928. The Library has continued to provide medical, scientific and technical material, reference and bibliographic service to the component commands of the National Naval Medical Center, the Bureau of Medicine and Surgery, and to the Service at large. At the present time the Library consists of more than 35,000 medical books, journals, and pamphlets; however, through the operation of a well organized intra-library loan system, between all major libraries of the Washington area, including the Congressional Library and the Armed Forces Medical Library, the resources of the Stitt Library are practically unlimited. Emphasis is placed on current domestic and foreign journals and this policy has proved to be sound for the Medical School and its library clientele. Translations from foreign material are available on a limited basis through the Library staff.

Audio-Visual Division: The audio-visual division consists of two major branches; one is primarily concerned with the writing, planning, and

production of various forms of training aids such as films and other similar devices. The second branch plans and produces exhibits for both training and for presentation at scientific meetings. This important element in the overall training program of the Navy, formerly part of the Bureau of Medicine and Surgery, is now well established in the School organization and provides a valuable service to the Navy as a whole.

Tissue Bank: The tissue bank is a joint operation of the School, the Naval Medical Research Institute, and the Naval Hospital, Bethesda. While strictly speaking still a clinical research project, it has received a great deal of attention of late for its work in supplying freeze-dried grafts of bone, arteries, skin, fascia, dura, and cartilage for surgical implantations by collaborators. Some of the technics have received general clinical acceptance; this is particularly true of bone and artery grafts. The tissue bank has developed greatly since its inception in 1950 and will assume even more importance as new technics and methods are developed at the School and other institutions.

Treponemal Pallidum Immobilization Laboratory: The TPI test is another special service provided by the School to the Tri-Services and to other Government agencies. It was first organized at the Naval Medical School when it was no longer considered to be strictly research. Now, serum is received daily from many sources. Numerous investigators had researched the theory that a specific antibody produced against virulent treponema pallidum was present in the serum of persons having syphilis. The existence of the antibody was not proved because of an inability to keep the treponema alive in vitro for any length of time. The TPI test is based on the discovery of a technic which makes it possible to keep the organism alive for six to eight days. The specificity of the test makes it a valuable diagnostic tool in the hands of the clinician.

Naval Medical School Board Room: The board room organization of the School has long been an important element in the processing by the Naval Examining Board of Medical Department officer candidates, and in their promotions.

Color Atlas of Pathology: Prior to World War II it was felt by many Navy pathologists and clinicians that there was not a comprehensive, concise and realistic source of reference in full color in the field of anatomical pathology. The possibility of using material then in the Pathology Departments of the Naval Medical School, the Armed Forces Institute of Pathology, Johns Hopkins Hospital, and Georgetown University Medical School was conceived in the early years of the war. There were also the facilities of the art and lithographic departments of the Naval Medical

School which were important considerations. The Color Atlas of Pathology was started in 1944 and today, with two volumes completed and a third in progress, the School can well be proud of this achievement.

Publications Division: The writing, editing, publishing, and distributing of divers Medical Department publications is another special service provided to the Navy by the School. Training manuals are perhaps the most important of these; however, it seems apropos to mention that, while edited and printed elsewhere, the Medical News Letter is distributed by the Publications Division of the Naval Medical School. (G. E. STAHR, CAPTAIN, MC, USN, Commanding Officer, U. S. Naval Medical School)

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### Bronchiectasis

Bronchiectasis is literally defined as a dilatation of one or more bronchi. Grossly, the dilated bronchi may assume a cylindric, saccular, or cystic configuration. The bronchial walls are usually thickened, and, microscopically, they are congested and infiltrated with lymphocytes and plasma cells. During an exacerbation of the bronchial infection, the cellular infiltrate may become predominantly polymorphonuclear. The bronchial epithelium is usually relatively normal and ciliated. Occasionally, the mucosa is ulcerated, or squamous metaplasia of the epithelium is found. Destruction of varying amounts of muscular and elastic tissue with fibrous tissue replacement is common. In the more severely involved bronchi, the cartilaginous plates likewise may be destroyed. Proliferation of the intima of the bronchial arterioles is seen in over half of the cases. Gross and microscopic evidence of varying degrees of chronic pneumonitis, atelectasis, and/or fibrosis is found in the adjacent lung parenchyma. The irreversible changes of the bronchi and lung parenchyma point to the usual chronicity of the disease.

Bronchiectasis most often involves the lower lobes and is more common in the left than in the right lower lobe. From 30 to 50% of the patients have bilateral lower lobe involvement. Approximately 30 to 40% of individuals with right lower lobe bronchiectasis have associated bronchiectasis in the right middle lobe; a corresponding percentage of individuals with left lower lobe bronchiectases have involvement of the lingula of the left upper lobe. Uncomplicated bronchiectasis of the upper lobes is comparatively rare. Perry and King found only three patients with involvement of the upper lobes in a series of 400 cases.

Bronchiectasis is associated with at least 40% of the cases of pulmonary tuberculosis. The bronchiectasis ordinarily is confined to the segments of

lung involved by the tuberculous process; therefore, it usually is encountered in the apical and posterior segments of the upper lobes and the superior segments of the lower lobes. Patients who have moderately or far-advanced tuberculosis of considerable duration are most apt to have associated bronchiectasis.

Approximately 70% of the patients with proved bronchiectasis have detected the onset of their symptoms within the first three decades of life. However, no age group can be considered free of the disease. Clinical investigation during the past 10 years has shown that a number of cases have been detected in the older age brackets. The sex distribution is equal for males and females.

About half of the patients with bronchiectasis have dated the onset of their illness to a severe, acute, respiratory infection which is usually described as a bronchopneumonia. It has been stated that bronchopneumonia due to streptococci is most likely to result in bronchiectasis. Pneumococcal pneumonias are followed by the disease less often. From 10 to 15% of the patients with bronchiectasis have noted the initial manifestations of the disease following respiratory infections associated with severe attacks of either measles or whooping cough. A small percentage of individuals have dated the onset of their illness to an attack of influenza or of primary atypical pneumonia.

Chronic or intermittent cough occurs in almost every patient with bronchiectasis. Usually the cough is productive of purulent or mucopurulent sputum, varying in amount from a few milliliters to over one liter per day. Copious purulent sputum will settle into three layers on standing. The lower layer is purulent, the middle layer is mucoid, and the top layer is frothy. Occasionally, the sputum has a foul odor. The productive cough is ordinarily most pronounced in the morning shortly after the patient arises.

Hemoptysis occurs in at least 50% of the patients with bronchiectasis. Ordinarily the hemoptysis is not of serious proportions, but occasionally exsanguinating pulmonary hemorrhage occurs. Chest pain is a rare symptom but may occur during attacks of acute pneumonitis and pleuritis. Wheezing is infrequent but has been detected in some patients with extensive bronchiectasis or with associated partial bronchostenosis. Fever, malaise, easy fatigability, and weight loss are common only in those individuals with extensive involvement or with an acute exacerbation of the bronchial infection. Dyspnea is a late and rare symptom, but it has been noted in patients with extensive bilateral bronchiectasis with marked alteration in the adjacent lung parenchyma.

Until the advent of effective antibiotic therapy, the diagnosis of bronchiectasis implied a serious prognosis. In some series, 25 to 35% of the patients with bronchiectasis died as a direct result of their disease within 5 to 10 years after the onset of symptoms. Approximately 15% of the patients have lived

20 years or longer after the onset. Patients with bronchiectasis often have exacerbations of their bronchial infection and/or multiple attacks of pneumonia, which occasionally have resulted in crippling pulmonary insufficiency. Some patients with bronchiectasis have had their disease complicated by empyema, cerebral abscesses or, rarely, by amyloidosis.

The only definitive treatment for bronchiectasis is the surgical removal of the involved portion of the lung. Prior to the development of improved surgical technics and anesthesia, pulmonary resection for bronchiectasis was considered a formidable procedure because it carried high mortality and morbidity rates. However, in recent years, the surgical mortality and morbidity rates have been reduced to low levels. Nevertheless, the selection of patients for surgical treatment is often difficult. Each case must be judged on its own merits and individual therapeutic management must be the rule. Criteria which contraindicate surgical treatment are more clearly defined than are the indications for it. Individuals with extrapulmonary medical contraindications to major surgery are not candidates for resection. Furthermore, those persons who have irreversible pulmonary insufficiency have too high a surgical risk to warrant this mode of therapy. Patients with bronchiectasis involving all lobes are rarely candidates for surgical therapy. Individuals over 50 years of age with emphysema and bronchiectasis usually should not be subjected to the risks of resectional surgery.

Those individuals with bronchiectasis in whom surgery is contraindicated usually derive considerable benefit from adequate medical treatment. Medical management consists chiefly of the use of antibiotics and postural drainage. Antibiotics should be used whenever an acute pneumonic episode is superimposed on the bronchiectasis. Patients without demonstrable acute pneumonitis who have purulent or foul sputum should also be treated with antibiotics. Some patients will benefit from continuous antibiotic therapy. In most cases, however, antibiotics are required only during exacerbations of the disease. (D. E. Olson, Captain, MC USA, Bronchiectasis: Postgrad. Med., 18: 66-72, July 1955)

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#### Parenteral Aureomycin and Irradiation

In spite of intensive educational programs, large numbers of patients with far-advanced disease are seen in all cancer clinics. By the time these individuals appear, radical surgery frequently is either impossible or extremely mutilating and irradiation may be palliative at best. Tumor doses of radiation are limited because of the liability of the surrounding tissue to injury with consequent complications. Because intra-arterial administration of aureomycin in large doses, combined with nitrogen

mustard, improved operability in several patients, it was decided to combine antibiotic therapy with irradiation and follow with surgery if possible in selected cases of far-advanced cancer. Because high concentrations of aureomycin inhibit cell division in tissue culture as well as in small animal tumors, this antibiotic agent was given parenterally, preferably direct to the tumor site. All of the cases selected were those of far-advanced disease, marked local infection, large mass of tumor tissue, or poor general status.

Thirty-nine patients are included in this study. The cases were grouped according to primary site of disease. The groups were further divided as to cell type, and in the case of carcinoma of the cervix, into stage (League of Nations' Classification). Average age as well as age range for each group is indicated.

That present-day therapy in far-advanced cancer is usually inadequate, is generally agreed. Even when the disease is still localized, yet, advanced, serious deformity is often produced by the surgery or the irradiation necessary to control the cancer. The only hope of minimizing these complications is to increase the sensitivity of the tumor to the effects of irradiation without at the same time increasing the sensitivity of the surrounding structures.

The response of tissue to irradiation follows the law of Bergonie' and Tridondeau, that is: The more embryonal and undifferentiated the tumor cell, the greater is the tumor's radiosensitivity. Furthermore, the destruction of hyperchromatic cells is effected more easily than that of hypochromatic cells, and dividing cells are more susceptible to radiation than cells at rest. Other factors which affect the radiosensitivity of tissue are infection, vascularity of the tumor, and the general condition of the patient. Infected tissue and poorly vascularized tumors are less sensitive to irradiation. Patients in a debilitated state, from whatever cause, tolerate the general effects of irradiation poorly. A drug such as aureomycin, which may suppress cell division, would be expected to decrease the radiosensitivity of the tumor. However, if the metabolism of the cell is accelerated and infection is decreased, these two factors might counterbalance the effect of depression of cell division and make the tumor more radiosensitive.

Reports have indicated that penicillin, chloromycetin, and aureomycin interfere with cell division in tissue culture, especially at high concentrations.

Sokoloff and Eddy, and Trams and Klopp observed regression in animal transplanted tumors which seemed to be related to amount of antibiotic administered. Gummel and Lührs reported a significant growth-proliferating action of penicillin, streptomycin, chlormycetin, aureomycin, and terramycin on the Jensen sarcoma of the rat; however, they administered the broad spectrum antibiotics orally.

Speck and coworkers studied the effect of total body irradiation on antimicrobial defense mechanisms of mice by observing rate of death and

rate of spread of infection following intramuscular injection of streptococci. In irradiated animals, the streptococci disseminated more rapidly and the animals succumbed three to four days earlier than the controls. Cultures indicated that both lymphatic blockage and the filtering action of spleen and liver were virtually ineffective after irradiation. Penicillin eliminated bacteria except at the local site of infection and reduced mortality to the level of noninfected irradiated mice.

The effective dose level of antibiotic achieved may explain the difference in results obtained in different studies. Parenteral therapy, and especially intravenous administration, will produce blood levels many times higher than those obtained after oral therapy. In humans at least, serum level of antibiotic appears to be related, not only to dose and route of administration, but also to rapidity of excretion which, in turn, is largely controlled by renal function.

It is possible that only in tissue culture can sufficient antibiotic concentration be obtained to suppress cell division. It may be that effects noted in animal tumors and human tumors are the result of suppression of secondary infection. It is valid to assume that a poorly vascularized tumor will receive a much smaller concentration of drug than a tumor rich in blood vessels in spite of regional administration.

The indications that such combination therapy increases sensitivity of tumor cells to irradiation led the writers to believe that such treatment possibilities merit further investigation. In this study, 66% of the patients with Stage IV carcinoma of the cervix are still free of disease. Temporary benefits have been attained in some cases, and life has been prolonged in others who were considered, when first seen, to be completely hopeless. This salvage rate, although small, seems justification for continued trials of such a regimen.

The 39 patients with far-advanced cancer in this study included: 25 with carcinoma of the cervix uteri, one of the fundus, 2 of bronchogenic carcinoma, one of epidermoid carcinoma in a mediastinal cyst, one of carcinoma of the esophagus, 4 of carcinoma of the large intestine, 2 of carcinoma of the tongue, one of carcinoma of the buccal mucosa, one of carcinoma of the hypopharynx, and one of carcinoma of the maxillary sinus.

Thirty-five patients received concomitant irradiation and parenteral aureomycin therapy; in 4 cases, antibiotic administration preceded irradiation. Surgical removal of tumor followed in 15 cases, palliative procedures were done in 2 cases, exploration and closure were done in 3 cases, and 5 patients are awaiting surgery.

Clinical improvement was noted in 21 pelvic, 4 bowel, 2 chest, and 5 head and neck cases. Therapy produced no change in 7 cases. It is too early for final evaluation of results, but a number of the patients, included in this study, who would have been considered too hopeless for

any form of therapy, received temporary palliation and nine patients have no evidence of disease 4 to 19 months after treatment was started. (Bateman, J. C., Donlan, C. P., Klopp, C. T., Cromer, J. K., Combination Parenteral Aureomycin and Irradiation in Far Advanced Cancer: Am. J. Roentgenol., 74: 123-128, July 1955)

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#### Myocardial Infarction in Women

This study was undertaken in the hope that a modern analysis of myocardial infarction in women, plus a review of the present-day relevant literature, might provide some contribution to knowledge regarding the sexual disparity in this disease.

One hundred and forty-six women with myocardial infarction, admitted consecutively, comprise the substance of this study. The clinical diagnosis was accepted only if a typical series of electrocardiograms was associated with compatible clinical findings, and one or more of the following was present: fever, leukocytosis, neutrophilia, elevated erythrocytic sedimentation rate. A diagnosis on any other basis was accepted only if proved at autopsy.

The age range over which first myocardial infarctions occurred in these women was 27 to 81 years, and the average age at which the first infarct occurred was 64 years.

At the time of this study, 58 of the 146 patients were dead. Thirty-two (55.2%) of the 58 were autopsied. Thirty-six of these 58 died within the first year after their infarction, and almost equal numbers of patients (seven and eight) died each of the next two years. The longest survival in this group was 10 years. The number who died within the first year after their initial infarction increased progressively with each decade. In women with their initial infarction in the 60 to 69 age group, 16 of the 20 dead at the time of this study died within the first year after infarction. General implications only can be derived from these figures because the majority of patients in this series of 146 are still living.

Most studies on myocardial infarction or coronary disease in women have directed attention to the high incidence of hypertension and diabetes. Percentages have varied from 77 to 92.2%. There seems to be little doubt that hypertension and diabetes are unusually frequent in women with myocardial infarction, but there has been an unfortunate swing of the pendulum to undue hesitation to diagnose coronary artery disease in the woman without hypertension or diabetes. Approximately 70% of women in this series with myocardial infarction had one or both of these diseases, but the fact that 30% did not should not be overlooked. A more specific use of this axiom could refer to the premenopausal woman. Over 90% of the premenopausal women had either hypertension or diabetes, or both.

No correlation existed between the use of tobacco or alcohol and the occurrence of myocardial infarction in these women, although there were relatively few users of either. A smaller percentage of these patients was obese (64.6%) than some have reported. Approximately the same percentage was obese among the living as among the dead.

Characteristics of the menses, fertility, and childbearing of the patients in this series differed in no significant respect from those of women who do not develop myocardial infarction. This evidence suggests that there is no prevalence of hypoestrogenic females among those who subsequently have coronary artery disease.

Sixteen years, the length of time between the average age of menopause and occurrence of initial infarction, is long enough for a considerable amount of coronary atherosclerosis to develop after the cessation of ovarian function, if it is to be presumed that the functioning ovaries have held it in abeyance until then. However, the degree of coronary atherosclerosis apparently exhibits a gradual progressive increase from the age of 30 to 75, and there is no sharp upswing postmenopausally. Is this gradual increase in atherosclerosis sufficient to account for the sharp upswing in incidence of myocardial infarction postmenopausally? Possibly some of the other effects of estrogens are more sorely missed after the cessation of ovarian function than the effect on cholesterol metabolism, and presumably atherosclerosis.

Although the average degree of coronary atherosclerosis in women at the age of 64 (average age of initial infarction in this series) is still significantly less than that of men of the same age, the incidence of myocardial infarction in the two sexes at this age is very similar. (James, T. N., Post, H. W., Smith, F. J., Myocardial Infarction in Women: Ann. Int. Med., 43: 153-163, July 1955)

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#### Effects of Million Volt Irradiation on the Gastrointestinal Tract

Previously, there have been reported certain aspects, comparatively short-term, of the effects of supervoltage irradiation on the normal gastrointestinal tract of young male adults treated for testicular tumor. The present study is more inclusive and definitive in that autopsy findings, follow-up by correspondence, and thorough clinical examinations of approximately 100 patients, five years or more after completion of therapy, are available. In all, approximately 230 records, more than five years after therapy, have been evaluated.

A detailed history, including social, sexual, and economic adjustment after treatment, and physical examination, was made in the clinical study of each available patient. In all of these patients, complete gastrointestinal x-rays were obtained. About 25 patients had cholecystograms. In many of the patients, gastroscopy preceded by gastric biopsy, with use of a technique described by Palmer, and sigmoidoscopy were performed. Determination of gastric acidity with a standard histamine dosage (0.5 cc.), liver-function tests (sulfobromophthalein (Bromsulfalein), cephalin flocculation, and alkaline phosphatase routinely, others occasionally), determinations of serum amylase, as well as complete blood study and urinalysis, were routinely done for all patients. Other laboratory tests were performed when indicated on the basis of the history and physical findings.

Clinically, patients who suffered injury to the stomach started complaining shortly after completion of therapy. The average case had symptoms of epigastric pain, belching, nausea, and occasionally, vomiting two to three months after therapy. Perforation and hemorrhage, when it occurred, did so within six months of completion of therapy. In only a few cases, was the onset prolonged. In a previous paper, the findings at surgery were described. Following surgery, the patients were relieved of their gastric symptoms and did surprisingly well. The smallest dosage which caused an ulcer was 2424 r. At the five-year follow-up examination in this patient, he was asymptomatic and no abnormalities were found. In some of the patients known to have had an ulcer previously, only a narrowed antrum by x-ray, in some with and in some without symptoms, was found at the five-year follow-up. The author has not discovered whether the narrowing of the antrum is stationary or will progress to complete obstruction, but after five years, such obstruction of this area has not yet been experienced in patients having previous ulceration due to radiation.

All parts of the gastrointestinal tract were affected, but the sensitivity varied markedly in the individual patient. It was also shown that the same dosage of irradiation causing damage to the gastrointestinal tract in one person can be tolerated by another patient without damage.

Onset of symptomatology occurred earliest in cases in which the stomach was injured. Radiation injury to the small intestine and colon resulted in a more subtle clinical picture, with a delay in onset of symptoms for many months and even years after completion of therapy.

On the basis of these observations, a safe maximum tolerance dose to the antrum of the stomach would appear to be 4000 r delivered in 50 to 60 days. The maximum tolerance dose to small intestine is in the range of 4000 to 4500 r, while the large intestine can safely be exposed to 4500 r.

The biliary tree and liver appear to be affected by a dose of 5000 r or more.

Study of cases five years after therapy indicates that the incidence, extent, and nature of the radiation injury to the gastrointestinal tract may not yet have been fully catalogued.

Cancer of the gastrointestinal tract has not been encountered in this study. (Brick, I. B., Effects of Million Volt Irradiation on the Gastro-intestinal Tract: Arch. Int. Med., 96: 26-31, July 1955)

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### Surgical Aspects of Splenic Disease

That the spleen is not an organ necessary to life, is well known, but in spite of its seemingly slight importance there are a surprisingly large number of pathologic conditions resulting from its disease. Many of these diseases (e.g., thrombocytopenic purpura and hereditary spherocytic anemia) respond to splenectomy; accordingly, there is little controversy regarding indications for splenectomy in these two diseases. However, in numerous other diseases, such as Banti's disease, acquired hemolytic anemia, and secondary thrombocytopenic purpura, results are inconstant and unpredictable; rarely can it be explained why results are good or bad in the latter two diseases. For this reason, there is much need for further study of splenic diseases, in the hope that a better understanding of indications for splenectomy can be developed.

Removal of a normal spleen results in certain hematologic changes such as a temporary leucocytosis (with mild eosinophilia), thrombocytosis, and occasionally, erythrocytosis, but rarely is the patient aware of any subjective manifestations. Usually, splenectomy produces a decrease in thickness of some of the red cells to such an extent that leptocytic or target cells may be produced. Splenectomy is often followed by a temporary generalized enlargement of the lymph nodes. The removal of the spleen is in no way detrimental to the health of the patient.

Clinical experience has established the value of splenectomy in the treatment of three main types of hematologic diseases: (1) hemolytic disorders; (2) hemorrhagic diseases associated with thrombocytopenia in the presence of normal or increased numbers of bone marrow megakaryocytes; (3) hypersplenic states associated with splenomegaly (splenic dysfunction). On each of these three groups, there is controversy as to whether the peripheral blood changes are due, remotely, to an influence of the spleen, or the bone marrow (hormonal); to local destruction of circulating blood cells within the spleen (phygacytosis or sequestration); to the presence of a circulating platelet-reducing factor in the blood of some patients with idiopathic thrombocytopenic purpura, or to a combination of several of these mechanisms. In some of the foregoing hematologic conditions, even after the bone marrow has returned to normal after splenectomy, the neutropenic and thrombocytopenic elements in the blood may remain depressed. Also, the hemolytic mechanism may persist or recur after splenectomy. Thus, in some of the conditions named it is apparent that the mechanism responsible for the neutropenia, thrombocytopenia, and acquired hemolytic

anemia is not entirely due to a splenic hormone or phagocytic activity of the reticulum of the spleen.

Splenectomy may be indicated for cysts and tumors of the spleen, which are rare. About 80% of cysts are false cysts of the hemorrhagic type caused by trauma, inflammation, or parasites, whereas about 20% are true cysts of the dermoid or lymphangiomatous type. Most cysts produce pain in the left upper quadrant and left shoulder. Pain alone may be sufficient to justify splenectomy. Occasionally, hypersplenism is encountered with the cyst; if so, splenectomy may be indicated for this reason alone.

Occasionally, infarcts of the spleen and aneurysms of the splenic artery are encountered. The former may be undiagnosed before celiotomy; in one case, observed by the authors, emergency operation was performed for severe upper abdominal pain and shock, but nothing was found except the splenic infarct. Aneurysms usually produce marked splenomegaly, but the cause may not be determined preoperatively unless the aneurysm is large.

Occasionally, patients with sarcoidosis and myeloid metaplasia of the spleen associated with myelosclerosis of the bone marrow are improved by splenectomy, but usually only if hypersplenism is produced by the primary disease.

During the past few years, good results have been reported following splenectomy for porphyria. Important manifestations are splenomegaly, hemolytic anemia, photosensitivity, and various types of porphyrins in the urine. In a patient observed by the authors, uroporphyrin and coproporphyrin were found in the urine.

Numerous diseases are associated with splenomegaly which are not benefited by splenectomy. However, if hypersplenism develops with a significant degree of panhematopenia, splenectomy may be indicated to relieve this condition which may be giving rise to such symptoms as weakness, anorexia, and lassitude. If a severe thrombocytopenia develops and hemorrhage ensues, indications for splenectomy may be urgent.

Pernicious anemia, polycythemia, Hodgkin's disease, and agnogenic myeloid metaplasia are diseases for which splenectomy is contraindicated. Leukemia is also a disease for which splenectomy is contraindicated, but Edwards reports a patient who lived four years after splenectomy for severe pain in the left upper quadrant secondary to an enormously enlarged spleen. Splenectomy is obviously contraindicated in acute splenic tumors.

In subacute bacterial endocarditis, splenomegaly is usually present but splenectomy is contraindicated except in the rare instances in which a massive infarct due to an embolus develops; the authors had one such case. Mediterranean anemia and sickle cell anemia are also conditions for which splenectomy should not be performed unless a hemolytic factor is prominent. Likewise, splenomegaly due to such parasitoses as trichinosis, filariasis,

kala-azar, and distomiasis contraindicate splenectomy except in chronic cases in which hypersplenism is significant.

Although for years splenectomy has been known to yield very good results in familial hemolytic anemia and thrombocytopenic purpura, only in the past few years has it been learned that good results are often obtained in acquired hemolytic anemia and secondary purpura. The indications for operation in the latter two diseases are not well defined, although the presence of some phase of hypersplenism represents the clearest indication. Accordingly, much more experience is needed in these diseases having borderline indications.

In the present series of 137 patients having splenectomy for splenic disease, 54 had hemolytic anemia. Of this group, 40 were classified as hereditary and 14 as acquired. The important differentiating feature in these two groups is the fact that in the former there is an increased mechanical and osmotic fragility of the red cells, whereas in the latter the red cell fragility is normal. Conforming to the reports of others, splenectomy yielded good results in all except one of the patients in this series with hereditary anemia. In the acquired group (in which Evans and associates have found autoantibodies, agglutinins, or hemolysins) the authors performed splenectomy on 8 patients but sustained good results in only 3.

Splenectomy was performed in 41 patients with thrombocytopenic purpura. Good results were obtained in 88% of 35 classified as idiopathic; in 6 cases, classified as secondary purpura, results were good in only 3.

Under the heading "Hypersplenic States" the authors have classified primary splenic neutropenia and pancytopenia, Banti's syndrome, and Felty's syndrome. Conforming to results originally reported by Doan and associates, they had good results in all of the first group. For the past several years, they have not performed splenectomy (with one exception) in Banti's syndrome unless a portacaval or splenorenal shunt was performed at the same time. Results of the shunt operations are not included in this series. The authors have followed all of their 22 patients having splenectomy for Banti's syndrome. Results were good in only 4 cases (18%); the mortality rate was 22% in the Banti group. Eight of the 17 patients surviving operation have died since leaving the hospital, 7 of hemorrhage from esophageal varices. Good results were obtained in 4 of 8 patients with Felty's syndrome. The authors have performed splenectomy for Gaucher's disease in only one patient; she is alive and well 6 years after splenectomy.

The mortality rate in the entire series was 7.3%. It is very significant that the mortality rate was lowest in the groups (hereditary hemolytic anemia and idiopathic thrombocytopenic purpura) having the best symptomatic results after splenectomy. (Cole, W. H., Majarakis, J. D., Limarzi, L. R., Surgical Aspects of Splenic Disease: Arch. Surg., 71: 33-46, July 1955)

Surgery of Localized Emphysematous Disease

Similar to the treatment of other chronic diseases, surgery of localized pulmonary emphysema has been concerned primarily with handling complications occurring in the course of the disease. The most common of these morbid processes, which may require surgical correction, are perforation or rupture of the emphysematous lesion, with resultant pneumothorax; hemorrhage, with or without superimposed infection within the involved area, and distention of the lesion with compression of comparatively normal lung, which may lead to respiratory failure.

In discussing localized emphysema, the authors refer to a severe form of lung over-distention in which the most significant lesions are limited in one or both lungs to an area the size of a segment or lobe, in contrast to the senile or diffuse form of the disease which involves the entire parenchyma of both lungs more or less uniformly. From an etiological standpoint, these lesions have been classified with the so-called idiopathic groups, because the disease has not been caused by specific bronchial tumors, foreign bodies, infection, or inspissated mucoid plugs.

There are two primary clinical types of this disease: the cystic and the diffuse. The former is the more common, and these cysts take the form of pulmonary blebs, bullae, and pneumatoceles, the name depending chiefly on the size and location within the lung. In contrast to the congenital lung cyst, these air-containing pockets have no epithelial linings and their walls are made up of compressed or divulsed lung parenchyma or pleura.

During the past quarter century, surgical interest in localized emphysematous disease of the lung has increased markedly due to the accumulation of pathologic knowledge of the lesion.

From clinical observations and pathologic inspection of gross material in the operating room and laboratory there has been no question in the minds of the authors that the underlying pathologic cause of these lesions has been a bronchial abnormality which obstructs the escape of air in the expiratory phase. However, by careful histologic preparations, they have been unable to define concisely and to classify this abnormality, even in infants with huge cysts and diffuse lobar disease where rather large bronchi have been obviously involved and pathologic sections have been adequate for study.

Studies by the authors have shown that the primary effect of these lesions has been an interference with ventilation. That this change is reversible has been clear from the clinical results recorded and the post-operative studies of pulmonary volumina and exchange.

A review of 40 patients with localized pulmonary emphysematous lesions has shown the high morbidity and mortality of this disease when untreated. Follow-up studies in 17 patients who refused surgery showed that 9 had died of their disease, 6 had shown progression of lesion and

disability, and 2 were unchanged. In contrast, 22 of the 23 patients treated surgically during this period, are alive and have been markedly improved.

The principal indications for surgery are the complications of the lesions, namely: rupture with pneumothorax, hemorrhage, and overdistension, with marked compression of normal lung tissue. Excisional and decompressive surgical technics may be utilized for the therapy of localized emphysematous disease.

Clinical and physiologic studies on these patients with emphysematous disease have shown a return to normal of the deranged ventilatory functions after surgical therapy. In addition, limited follow-up studies have shown no evidence of recurrence or progression of emphysema in this group of patients. (Weisel, W., Surgical Treatment of Localized Emphysematous Disease: Ann. Surg., 142: 17-27, July 1955)

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#### Mucous Adenocarcinoma of the Urinary Bladder

Material for this study consisted of 44 selected cases in which a definite mucous adenocarcinoma was found on microscopic examination of the urinary bladder. In every case, the tumor was proved to be vesical (including urachal) in origin and not to have arisen in the prostate, seminal vesicle, or any other organ. Microscopic sections stained with hematoxylin and eosin were available for study. In most cases, sections were also prepared by the periodic acid-Schiff method or with mucicarmine stains.

Clinical summaries on all patients were available. Two tumors were found at autopsy. In the remaining 42, the clinical history was typical of bladder tumor, and a bladder tumor was found cystoscopically. Follow-up information was obtained in 41 cases. Sixteen of these came to autopsy, and complete autopsy records and slides were available on 10.

Thirty-three patients were male, 10 were female, and the sex of one was unknown. The youngest patient was 18, the oldest 77 years of age. Two patients had pre-existing exstrophy. Hematuria was the most frequent symptom. The duration of symptoms ranged from one day to 12 years.

In 32 patients, the tumors occupied a single area. Of these, 16 occurred in the dome, 7 in the trigone, and 3 each in the anterior, posterior, and lateral walls. In 12 patients, the tumors occurred in more than one area of the bladder. The size of the tumor varied from small to so large that it involved the entire bladder.

Almost every form of therapy had been employed, ranging from removal of tissue for examination to total cystectomy.

Metastases were recorded in 10 patients; in 8 of these, the regional lymph nodes were involved with or without distant metastases; in one, there

was metastasis to the lung in addition to the local extension of the tumor to the space of Retzius, and microscopic emboli were found in the lung of the tenth patient. Among 8 who had regional lymph-node metastases, one also had bone metastases and a second had both bone and liver metastases.

One patient died without tumor or metastases one year postoperatively; there was no follow-up information on another patient. Four patients were dead without any information as to tumor status after 27 days, one year and 9 months, 6 years, and 14 years postoperatively. In 2 patients, the tumor was discovered at autopsy, and 23 patients died with tumor after survival periods of a few days to almost 8 years following operation. Eleven patients were living without tumor, the period of observation extending from 4-1/2 to 14 years. Two patients were living with tumor 3 and 4 years postoperatively. Thus, the 5-year survival rate was 27% and the 5-year mortality rate about 70%.

The gross characteristic that distinguished these tumors from other epithelial tumors of the bladder was the presence of mucus on the external surface or in the substance of the tumor. The characteristic microscopic feature was the presence of extracellular and intracellular mucus.

As far as age, sex distribution, symptoms, number of recurrences, and frequency of metastases are concerned, these tumors resemble transitional-cell carcinoma of the bladder. In certain respects, however, the two differ. Only 34% of the transitional-cell carcinomas in the authors' files were limited to a single area. Of these, 47% were in the lateral walls; 21% in the trigone; 18% in the posterior wall; 8% in the anterior wall; and 6% in the dome (data from the Bladder Tumor Registry). More than 63% of these vesical adenocarcinomas involved a single area. The lateral walls were the site of 17% of such single tumors; the trigone, of 9%; the anterior wall, of 10%; the posterior wall, of 7%; and the dome, of 57%. Furthermore, only 20% of these adenocarcinomas of the bladder were papillary and non-infiltrating; 20% were papillary and infiltrating; and 60%, nonpapillary, sessile-nodular infiltrating; whereas the percentage distribution of transitional-cell carcinoma was about 40, 40, and 20 respectively.

As far as survival and mortality rates are concerned, these adenocarcinomas (including urachal tumors) had a 5-year mortality rate of about 70%, while transitional-cell carcinomas as a group, without regard to grade, had a 5-year mortality rate of 52% (data from the Bladder Tumor Registry). Thus, the mortality rate for the vesical adenocarcinomas (including urachal tumors) approaches that for papillary and infiltrating carcinomas, Grade III.

Although vesical adenocarcinomas as a group resemble (transitional) carcinomas of the bladder in many respects, they present a more unfavorable prognostic outlook for the patient. This may be explained by the relatively large number of adenocarcinomas that occur in the dome, the silent area of the bladder, where a tumor may remain undetected for a long time and, when found, may be so extensive as to prevent complete

removal. (Transitional-cell carcinoma of the dome also presented a more unfavorable prognosis. ) Another explanation may be that some of these tumors probably are urachal in origin.

Complete removal of the tumor and control of infection appear from this study to be the therapy of choice in adenocarcinoma of the bladder. While total cystectomy may be indicated in specific cases, the authors do not consider it "the treatment of choice" in all patients with mucousadenocarcinoma, as has been advocated, because a number of their patients are living and well without total cystectomy. In patients with malignant urachal tumors, not only must the primary lesion be completely removed, but its ramifications and extensions must also be widely excised. (Mostofi, F. K., Thomson, R. V., Dean, A. L. Jr., Mucous Adenocarcinoma of the Urinary Bladder: *Cancer*, 8: 741-757, July-August 1955)

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#### The World Health Organization

The interrelationships between various diseases and their relationship, in turn, to standards of living and political ideology indicate why every citizen of the United States, particularly all those interested in preventive medicine, should be informed concerning the World Health Organization and give it enthusiastic support.

In spite of its extremely modest budget, the World Health Organization is exerting a remarkable influence in the improvement of the public health throughout the world, which has, in turn, great implications in reducing the chances of a hot war.

The World Health Organization was not the first official international organization in the public health field. Between the first and second world wars, national governments initiated, as part of the League of Nations, a Health Organization as a first attempt to establish a central international public health organization. There was already in existence an international office of public hygiene in Paris, but this office was not related to an association of governments and concerned itself mainly with attempts to prevent spread of certain epidemic diseases, and a limited intelligence service on the prevalence of a few contagious diseases in the cooperating countries. Even the activities of the new Health Organization of the League of Nations were quite restricted, and as part and parcel of the League itself, it was submerged and handicapped by the political considerations involved in the League proper. As the League lost prestige and influence, the health unit suffered accordingly.

The WHO is an organization of national governments affiliated with, but not an integral part of, the United Nations. In other words, a country does not have to belong to the United Nations in order to be a member of the WHO. There are, in fact, many more countries which are members

of the WHO than members of the United Nations--some 84 countries, in fact. A number of these countries have been prevented by Russia's veto from entering the United Nations.

The World Health Organization is interested in promoting health throughout the world, and as defined in the constitution of the WHO, health means "a state of complete physical, mental, and social well being, and not merely the absence of disease or infirmity." It also holds that health, so defined, is one of the fundamental rights of every human being, without distinction of race, religion, political belief, economic, or social conditions.

In the organization and administration of the WHO, the policy-making body is the World Health Assembly which is held once a year and is attended by the delegates of the various states. Members decide on the WHO program for the following year, determine its budget, and adopt such international health regulations as may be necessary. Most of these assemblies have been held at headquarters in Geneva, although the Second World Health Assembly was held in Rome, and the Assembly this year was in session in Mexico City--the first time it has been held in the Western hemisphere.

The Assembly elects 18 countries to designate one member each to the executive board which functions essentially as an executive committee. This board meets twice a year.

WHO, itself, is staffed by a competent trained secretariat under the Director General, Dr. M. G. Candau of Brazil. Dr. Candau is the second Director General of WHO, and recently succeeded Dr. Brook Chisholm of Canada upon his retirement.

WHO is guided in the technical aspects of its work by a number of panels of experts. Administration is decentralized through six regional offices: namely, European, African, Eastern Mediterranean, Southeast Asia, Western Pacific, and that of the Americas. In the case of the Americas, the Pan American Sanitary Bureau, which was established before the WHO came into being, has been designated as the regional WHO office for the Americas and its headquarters are in Washington, D. C. The member countries of each region meet regularly in committee to plan local programs and to review the work of the regional office. (Perkins, J. E., *The World Health Organization: Journal of Dental Medicine*, 10: 107-114, July 1955)

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#### Change of Address

Please forward requests for change of address for the News Letter to Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

Postgraduate Short Courses for Medical Officers

The following postgraduate short courses will be given as indicated. Interested medical officer personnel should forward requests via official channels, addressed to the Chief of the Bureau of Medicine and Surgery. Requests for attendance must be received in BuMed at least 30 days prior to commencement of the course requested. Travel and per diem orders chargeable against Bureau funds will be authorized those approved for attendance.

Army Medical Service

<u>Course</u>	<u>Location</u>	<u>Dates</u>	<u>Navy Quota</u>
<u>Medical Care of Atomic Casualties</u>	Walter Reed Army Med. Center, Wash., D. C.	12-21 Sep 5-14 Dec '55	4

This course is open to all interested medical officers; however, priority will be given to requests from officers who are Board certified, Board qualified, or residents in Surgery.

<u>The Kimbrough Uro- logical Seminar</u>	Brooke Army Med. Cen- ter, San Antonio, Texas	22-24 Sep '55	10

Priority will be given to requests from medical officers who are Board certified, Board qualified, or senior residents in Urology.

<u>Recent Advances in Internal Medicine</u>	Letterman Army Hospital San Francisco, Calif.	31 Oct - 4 Nov '55	10

<u>Symposium on Pul- monary Diseases</u>	Fitzsimons Army Hospital, Denver, Colorado	26-30 Sep '55	10

Priority will be given to requests from medical officers who are Board certified, Board qualified, or senior residents in Internal Medicine.

Armed Forces Institute of Pathology

<u>Forensic Pathology</u>	Washington, D. C.	14-18 Nov '55	10

<u>Pathology of Diseases of Laboratory Animals</u>	Washington, D. C.	5-9 Dec '55	10

Priority will be given to requests from medical officers who are Board certified, Board qualified, or senior residents in Pathology.

<u>Industrial Medicine &amp; Occupational Health</u>	Bellevue Medical Center New York, New York	26 Sep through 18 Nov '55	

This course is open to Regular Navy industrial medicine medical officers of all grades through CDR, who are currently on duty in industrial medicine billets in shipyards, air stations, ammunition depots, supply activities, et cetera. (ProfDiv, BuMed)

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## MEDICAL RESERVE SECTION

### New Senior Medical Student Program Offered to Ensigns 1995 USNR

Medical students commissioned as Ensigns 1995 USNR, about to enter their final year of medical school, are eligible to apply for enrollment in the Navy's new Ensign 1995 Senior Medical Student Program.

Recently authorized by the Secretary of the Navy, this program permits the Navy Department to sponsor education for medical students who have selected the Navy as the service of their choice.

Here are the main requirements. Applicants should:

- 1 Be commissioned as an Ensign 1995 (Medical) USNR.
- 2 Be accepted for enrollment in a school of medicine accredited by the American Medical Association.
- 3 Meet the same physical standards established for Regular Navy Staff Corps officers.
- 4 Upon completion of medical school, agree to accept a Regular Navy commission; if a regular commission is not tendered, to accept a commission in the Naval Reserve.
- 5 Agree to participate in the National Intern Matching Plan. In the event the individual is not matched with the Navy, he must accept a superseding appointment in the Naval Reserve, and will be in an inactive status while completing a civilian internship not to exceed twelve months. Upon completion of this internship, a regular commission must be accepted, if tendered.

Ensign 1995 (Medical) officers, if selected, will be ordered to active duty at the medical school where enrolled and while in attendance and successfully pursuing their professional studies will receive the full pay and allowances of their rank. Pay and allowances are based on longevity as follows:

- 1 Less than two years and no dependents - \$338.58 per month; with dependents - \$355.68 per month.
- 2 Over two but less than three years and no dependents - \$353.40 per month; with dependents \$370.50 per month.
- 3 Over three but less than six years and no dependents - \$412.68 per month; with dependents \$429.78 per month.
- 4 Over six and less than eight years and no dependents - \$428.28 per month; with dependents \$445.38 per month.

Ensigns 1995 (Medical) availing themselves of this Senior Medical Student Training and accepting an appointment in the Regular Navy, will be obligated to serve on active duty at the discretion of the Secretary of the Navy for a minimum period of three years, excluding the period served as a senior medical student and in an internship.

Applications are currently being processed at all Recruiting Stations and Offices of Naval Officer Procurement where more detailed information regarding this program may be obtained. Candidates, who meet professional and physical requirements, will be considered for selection by a board convened in the Bureau of Medicine and Surgery for the purpose of selecting 100 applicants for enrollment in this program during fiscal year 1956. Present planning provides continuation of this student program for fiscal year 1957.

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#### Sixth Annual Military Medico-Dental Symposium

The Sixth Annual Military Medico-Dental Symposium for all Armed Forces medical personnel of the United States will be held at the U.S. Naval Hospital, Philadelphia, Pa., 17-23 October 1955, under the sponsorship of the Commandant, Fourth Naval District.

As in previous years, the program for this Symposium has been planned to present professional advances developed by both civilian and military services. The subjects will be presented by representatives of the civilian and Armed Forces personnel who are outstanding in their

specialties. Special sessions are planned for officers in the Medical, Surgical, Dental, and Administrative fields.

In accordance with BuPers Notice 1301 of 5 April 1955, the Chief of Naval Personnel approved this Symposium for the awarding of retirement point credits to those eligible Naval Reserve officers attending.

Medical Department officers on active duty may be given "Authorization Orders" (at no expense to the Government) in accordance with current instructions.

All Medical Department officers, whether on active or inactive duty, are urged to take advantage of the opportunity to attend this Symposium. Information concerning this program is available at the District Medical Office, Building Four, U.S. Naval Base, Philadelphia 12, Pa.

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#### Medical Reserve Program Officer Billets

Applications for full time active duty as a Medical Reserve Program Officer are desired from interested and qualified Reserve Medical officers whose rank is commander or captain and who desire to serve on extended active duty for a period of two years or longer.

The duties of a Medical Reserve Program Officer offer a most interesting and challenging job to the Senior Reserve Medical officer, whose function is to assist the District Medical Officer in carrying out the directives of the Commandant in regard to the Medical Reserve Program. Among the duties performed by this officer when directed by the District Medical Officer are the following:

- 1 Advisor to the Commandant and Naval Reserve medical personnel on all matters pertaining to the Medical Reserve Program.
- 2 Provide liaison support to the Office of Naval Officer Procurement in procuring Naval Reserve Medical Department personnel.
- 3 Act as liaison for the District Naval Officer Deferment Board for Naval Reserve medical officers ordered to active duty.
- 4 Conduct administrative inspections of Naval Reserve training facilities and serve as medical member of the Commandants Board of Inspection for Reserve training facilities.
- 5 Assist in the preparation, development, and conduction of symposia and other special training courses pertaining to the Medical Reserve Program.

In addition to accruing one retirement point toward Naval Reserve retirement for each day of active duty performed, Medical Reserve Officers receive the full pay and allowances of their grade plus the additional \$100 per month authorized for medical officers on extended active duty. For further information concerning this duty, write to the Chief, Bureau of Medicine and Surgery (Code 36), Navy Department, Washington, D. C.

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From the Note Book

1 The President, on August 1, 1955, approved the report of the Selection Board which recommended the following named medical officers for temporary promotion to the grade of Rear Admiral in the Medical Corps: Captain Courtney G. Clegg, Commanding Officer, U.S. Naval Hospital, Philadelphia, Pa.; Captain Hubert J. Van Peenen, Staff Medical Officer, Cinc Lant with additional duty as Sac Lant Medical Officer; and Captain Thomas G. Hays, Commanding Officer, U.S. Naval Hospital, Mare Island, Calif. (TIO, BuMed)

2 Rear Admiral R. W. Malone, DC, USN, Assistant Chief for Dentistry, represented the Navy at the Federation Dentaire International in Copenhagen during the period August 14-20, 1955. Admiral Malone is a member of the Armed Forces Dental Service Commission of that organization (TIO, BuMed)

3 Vernon P. Perry, Hospital Corpsman, First Class, USN, was awarded the Commendation Ribbon with Metal Pendant for "outstanding performance" while serving as an Instructor and Staff Member of the Tissue Bank Department at the U.S. Naval Medical School, NNMC, Bethesda, Md. (TIO, BuMed)

4 Captain B. F. Avery, MC, USN, will depart for Vienna on Sept 16, 1955, to attend the Ninth General Assembly of the World Medical Association, as well as the Sixth Medical Journalism Meeting, which is to be held in connection with this Assembly. Captain Avery, Director of the Publications Division and Director of the Armed Forces Medical Publication Agency, will represent the Navy Medical Department and the Agency at the Assembly. (TIO, BuMed)

5 Lt. J.G. Gordon, MC, USNR, presently assigned duty under instruction at the Naval School of Aviation Medicine, Pensacola, Fla., will become the Navy's first "resident" in Aviation Medicine. Upon completion of the basic course in aviation medicine in September, Lt. Gordon will begin his residency training at the School. Lt. Gordon has applied for transfer to the regular Navy. (TIO, BuMed)

6 A conference was held at the Naval Medical Research Unit Number 3, Cairo, July 8, 1955, to discuss the work carried out by the virology section on the ecology of certain virus infections in Egypt. Dr. R. M. Taylor, Head of the Virology Department of the Unit, reviewed the past four years work of his department on Sindbis virus, Q fever, typhus fever, West Nile, Sandfly fever, and certain as yet unidentified arthropod-borne viruses which have been isolated. There was an exchange of opinion on the interpretation of serological surveys for virus infections and the manner of preservation of serum collections was also discussed. In attendance at the conference were: Dr. H. Koprowski, Lederle Laboratories; Dr. P. Lepine, Pasteur Institute, Paris; Dr. K. Habel, NIH; Dr. M. M. Kaplan, WHO, Geneva; Dr. D. Horstman, New Haven, Conn., the staff of the Virology Department of the Naval Medical Research Unit including Dr. Taylor, Dr. Farag Rizk, and Cdr. H. Hurlburt, MSC, USN, and Dr. Dowdeswell, Dr. C. Klimt, and Mr. H. Shipman from WHO, Oalyub, Egypt. (PRO, NAMRU-3)

7 A Military Seminar for Dental officers of the U. S. Naval Reserve not on active duty will be held at the Naval Station, Treasure Island, during the Annual Session of the American Dental Association, at San Francisco, October 17-19, 1955. Points for promotion and retirement may be earned by Reserve Dental Officers by attending various meetings of the seminar which will be of military or professional interest and conducted by authorized military personnel. Further information and details will be announced at a later date. (TIO, BuMed)

8 The Public Health Service, U. S. Department of Health, Education, and Welfare, has announced release of the 1955 edition of the Manual of Serologic Tests for Syphilis.

The Manual assembles the latest technical procedures to be observed in the performance of each of the reliable, evaluated serologic tests for syphilis now commonly employed in the United States. Included are the American Public Health Association, Hinton, Kahn, Kline, Kolmer, Mazzini, Rein-Bossak, and VDRL tests.

9 Construction contracts for 169 projects to aid in stream pollution abatement, through providing treatment of sewage from municipalities, institutions, and other significant population centers, were awarded by cities of the nation during the first quarter of 1955. The contracts totaled \$59 million and covered 72 new plants and 97 additions, enlargements, or improvements to existing plants. (P. H. S., H. E. W.)

10 The ability of the heart to fulfil its function in maintaining the circulation can be influenced materially by diet. By appropriate dietary regulation

using subcaloric feedings in acute failure, the work of the heart is reduced, thereby increasing blood flow, lowering the blood pressure, slowing heart rate, increasing vital capacity and inducing diuresis. (Arch. Int. Med., July 1955; M.G. Wohl, M.D., C.R. Shuman, M.D., C. Alper, Ph. D.)

11 The fractured rib is often an injury of considerable consequence. Because of the proximity of the bony rib cage to vital underlying organs, complications tend to be serious. (Arch. Surg., July 1955; R.L. Rapport, M.D., R.B. Allen, M.D., G.J. Curry, M.D.)

12 The cause for the anemia occurring in cancer in the absence of hemorrhage, infection, or cachexia is not clear, but one possible mechanism is an abnormally short red-cell life span similar to that seen in leukemia. (Cancer, July-August 1955; N.I. Berlin, et al.)

13 Jaundice indicates a pathologic condition that demands immediate treatment. The chief problem in making the diagnosis of jaundice is in differentiating hepatic (medical) from obstructive (surgical) jaundice. (GP, July 1955; C.H. Brown, M.D.)

14 Gallstone ileus should be suspected in cases of progressive intestinal obstruction in elderly obese females where no obvious cause is apparent. (Ann. Surg., July 1955; S.L. Deckoff, M.D.)

15 Because of the increased palatability of the diet, beer may be used advantageously in the low salt diet for treatment of kidney disease. (Am. J. Med. Sc., July 1955; E.G. Olmstead, M.D., J.E. Cassidy, M.D., F.D. Murphy, M.D.)

16 The clinical and roentgenological findings of osteopetrosis in 5 adults are reviewed in Am. J. Roentgenol., July 1955, C.L. Hinkle, M.D., D.D. Beiler, M.D.

17 Bilateral resection therapy in pulmonary tuberculosis is discussed in Dis. Chest, July 1955; J.K. Kraan, M.D.

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The printing of this publication has been approved by the Director of the Bureau of the Budget, 16 May 1955.

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Recent Research ProjectsNaval Medical Research Institute, NNMC, Bethesda, Md.

- 1 Steroidogenesis by Intact Calf Adrenals Perfused In Vitro. NM 006 012.04.75, 22 December 1954.
- 2 The In Vitro Influence of Bacterial Pyrogens on the Adrenocortical Function of Perfused Calf Adrenals. NM 006 012.04.79, 29 January 1955.
- 3 Sodium-Retaining Material in Calf Adrenal Perfusates. NM 006 012.04.78, 29 January 1955.
- 4 The Ultrasonic Dental Cutting Instrument. NM 008 015.08.01, 29 January 1955.

Naval Medical Research Unit No. 3, Cairo, Egypt

- 1 Indigenous Wild Birds of the Nile Delta as Potential West Nile Virus Circulating Reservoirs. NM 007 082.13.08.
- 2 Therapeutic Experiences with Erythromycin Alone and in Combination with Streptomycin in the Treatment of Brucellosis. NM 007 082.11.06.
- 3 Tissue Culture Applied to the Study of Sindbis Virus. NM 007 082.13.13.
- 4 Some Concepts of Amebic Dysentery. NM 007 082.12.06.

Naval Air Development Center, Johnsville, Pa.

- 1 A Post-Mortem Study of Rhesus Monkeys (*Macaca mulatta*) at Intervals after Single or Repeated Exposure to Negative Acceleration. NM 001 060.11.01.

Naval Medical Field Research Laboratory, Camp Lejeune, N.C.

- 1 A Method for Obtaining the Force-Time Relationships of Certain Explosive Ordnance. NM 006 013.01.07, April 1955.
- 2 Fiber-Glass Reinforced Shelter AN/TSQ-6. Miscellaneous Tests and Minor Investigations. NM 007 083.03, June 1955
- 3 The Safe-Driver Inventory: A Test for Use in the Selection of the Safe Automobile Driver. NM 005 052.33.06, June 1955.

Medical Research Laboratory, Submarine Base, New London, Conn.

- 1 Submarine Escape Training Experience. NM 002 015.08.03, 12 May 1955.
- 2 Field Evaluation of Submarine Rescue and Escape Suits. Memorandum Report No. 55-3. NM 002 013.01.02, 6 June 1955.
- 3 Development of Carbon Dioxide in the "Pocket-Aire" Oxygen Re-breather Apparatus Model No. 1510. Memorandum Report No. 55-4. NM 002 015.14.02, 11 June 1955.

BUMED NOTICE 6710

20 July 1955

From: Chief, Bureau of Medicine and Surgery  
To: Distribution List

Subj: Morphine Injection, USP, 1/2 gr. FSN 6505-129-5510 and  
6505-129-5512; information concerning replacement of

Ref: (a) BuMedInst 6700.14 (formerly BuMedInst 4442.1A),  
Subj: Levels of Supply for medical and dental stores  
at consumer activities

This Notice notifies all addressees of action taken by this Bureau to accomplish replacement of subject items with Morphine Injection, USP, 1/4 grain, FSN 6505-129-5518.

This Notice applies to all active fleet units, advanced base assemblies, and elements of the Fleet Marine Force. The quantities of Morphine Injection USP, 1/4 grain, FSN 6505-129-5518, authorized by the current initial outfitting list, will be shipped automatically and charged against a Bureau controlled allotment.

Upon receipt of shipment of Morphine Injection, USP, 1/4 grain FSN 6505-129-5518, addressees shall immediately dispose of any stocks of the subject items including those units which may be contained in medical sets, kits, and assemblies. Disposition of stocks shall be in accordance with paragraph 7a of reference (a).

\* \* \* \* \*

BUMED INSTRUCTION 6710.1A

28 July 1955

From: Chief, Bureau of Medicine and Surgery  
To: All Ships and Stations

Subj: FSN 6505-146-4455, Sulfobromophthalein Sodium Injection, USP,  
0.15 Gm. (2-1/2 gr.), 3cc., 10s, manufactured by Unger Pharmaceutical Corporation and Gotham Pharmaceutical Company; disposition instructions for

Ref: (a) Art. 25-21, ManMedDept

This Instruction promulgates instructions for the disposition of the subject material, which was suspended from issue and use by BuMed Inst. 6710.1. BuMed Instruction 6710.1 is cancelled.

Material suspended by BuMed Instruction 6710.1 is to be surveyed and destroyed in accordance with the provisions of reference (a).

\* \* \* \* \*

BUMED NOTICE 6710

2 August 1955

From: Chief, Bureau of Medicine and Surgery  
To: All Ships and Stations Having Medical/Dental Personnel  
Regularly Assigned

Subj: Antibiotics; extension of potency dates

Ref: (a) Medical and Dental Materiel Bulletins (MDMB), Edition No. 55  
of 1 June 1955, and Edition No. 56 of 1 July 1955.

This Notice provides authority to extend the potency dates of certain antibiotics.

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AVIATION MEDICINE DIVISION



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1956 Aero Medical Association Meeting

The 27th Annual Meeting of the Aero Medical Association will be held at the Drake Hotel, Chicago, Ill., 15-19 April 1956. It is desired to firm up the best possible program at an early date. Flight surgeons and others in the field of Aviation Medicine who desire to present papers at the scientific session are requested to submit titles of proposed papers in the immediate future. These titles should be sent to either Captain Ashton Graybiel (MC) USN, U.S. Naval School of Aviation Medicine, U.S. Naval Air Station, Pensacola, Fla., Dr. J. P. Hardy, Aviation

Medical Acceleration Laboratory, U.S. Naval Air Development Center, Johnsville, Pa., or Commander R. L. Christy (MC) USN, Aviation Medicine Division, Bureau of Medicine and Surgery, Department of the Navy, Washington 25, D. C.

The submission of the abstract can be delayed until later, but must be received prior to 1 December 1955. Additional information as to preparation of abstracts and papers will be forwarded to those submitting titles.

Two types of papers are being planned for the program: Ten-minute technical papers with 5-minute discussion; and 20-minute general interest papers. Abstracts are required on both types of presentations.

\* \* \* \* \*

#### Ejection Seat Danger

Very recently, a potentially dangerous training "run" on an ejection seat occurred. A misfire occurred and another cartridge was inserted. This resulted in an exaggerated explosion and minor injury to the pilot. It could have easily been fatal. This could not have taken place if the proper safety instructions had been followed. It is realized that adherence to these safety factors result in some slowing down of the training schedule, but they do make such training safe.

\* \* \* \* \*

#### Acceleration Versus Performance

The Aviation Medical Acceleration Laboratory at the Naval Air Development Center, Johnsville, Pa., is about to expand its interests to include problems relating to linear acceleration. Heretofore, utilizing the facilities of the world's largest human centrifuge, this laboratory has made extensive contributions to the understanding of physiological and psychological considerations associated with radial acceleration. However, the Bureau of Aeronautics, in an effort to improve the potential and effectiveness of carrier-based aircraft, is establishing a project at the Aviation Medical Acceleration Laboratory involving studies on a high speed track.

To a great extent, the emphasis, thus far, in linear acceleration has been with problems relating to human physiological tolerances. Of possibly more significance to the Navy, however, is the problem of performance capabilities under the influence of linear acceleration. Naval carrier-based aircraft are designed to accept limited accelerative loads on the catapult and in the arresting gear. Any increase in these forces which could be utilized on board a carrier might well be translated into a higher performance aircraft.

The maximum linear accelerative load to which pilots may be exposed on the catapult with an assurance that the pilot will retain full control of the aircraft immediately after launch is not known at present. Studies will be undertaken utilizing the high speed tracks and captive rocket sleds at the Naval Ordnance Test Center, Inyokern, Calif., and the Holloman Air Development Center, Holloman Air Force Base, N. M.

By increasing the catapult and arresting gear forces, it is anticipated that future naval carrier-based aircraft will aid in exploiting the full military potential of naval aviation.

\* \* \* \* \*

#### Know Your Personal Equipment

The following list of recent pilot injury accidents was obtained from the U. S. Naval Aviation Safety Center at Norfolk. From a review of the misuse of personal equipment, it is obvious that two factors must be to blame. First, the pilot has received inadequate training in the use of personal equipment, or secondly, adequate lecturing by either the flight surgeon, the squadron safety officer, or the aviation physiologist has not been accomplished at the local level.

Here are a few examples:

Type of Aircraft	Injury Class	Summary
F9F-6	A	Crash on take-off. Shoulder harness loose; slid off. Pilot hit gun site. Hands burned--no gloves.
AD-4	B	Ditch. Water--48°, Air--46°. Pilot inflated "May West" under parachute harness making it impossible to unfasten harness. Could not release PK2. Had no exposure suit.
F2H-4	A	Pilot observed not to have oxygen mask in place. Plane settled 1500 yards off bow and floated 30 seconds. No trace of pilot.
F9F-6	C	Laceration, following bailout, of bridge of nose and under left eye. Pilot had cut off lower portion of rubber frame of goggles leaving

sharp plastic edges. Pilot ejected at 25,000 feet, free-fell to 18,000 feet when chute was accidentally opened. Pulled oxygen toggle on bailout bottle--no oxygen.

It would seem from the above examples, that somebody failed to get the word.

\* \* \* \* \*

#### Hazardous-Duty Incentive Pay

At this time, all necessary orders have been accomplished to implement the hazardous-duty incentive pay for both officers and enlisted men engaged as Low Pressure Chamber Inside Instructor/Observers or Subjects in Experimental Acceleration/Deceleration Studies as set forth in AlNav 46. There has been, of necessity, some delay in establishing this program in order that the Bureau of Naval Personnel, the Bureau of Medicine and Surgery, and the Bureau of Supplies and Accounts could properly promulgate enacting procedures. No provision could be made for retroactive payments.

\* \* \* \* \*

#### Semi-Solid Food in Tubes for Combat Flight Feeding

Development is being initiated on a new means of feeding in which foods will be packaged in collapsible containers similar to commercial types now on the market. This feeding technique can be used to supplement, or possibly to replace, liquid and tablet foods for use in combat jet aircraft on long missions. Semi-solid food in tubes is expected to overcome many difficulties. Such foods will be readily adaptable to feeding through an aperture in the face piece of the helmet. Semi-solid foods in tubes will overcome the suspension difficulties of liquid foods. These semi-solid foods are also expected to have a higher caloric density without sacrificing acceptability. They will have an advantage over food tablets in that the higher moisture content is expected to increase acceptability. In the future, the fighter pilot may only have to pick up a tube and squeeze it in order to get a highly acceptable food of his choice.  
(BAGR-CD TECH. NEWS LETTER, June 1955, Vol. III, No. 6)

\* \* \* \* \*

Aeromedical Exhibit at National Air Show

The Aviation Medicine Division of the Bureau of Medicine and Surgery, with the cooperation of the AudioVisual Section, will present a scientific exhibit at the National Air Show to be held at the Philadelphia International Air port on 3, 4, and 5 September 1955.

This exhibit will demonstrate a few examples of the manner in which aviation medicine contributes to the development of combat efficient naval aviators. The components will include a display on aviation psychology with emphasis on the Navy's battery of selection tests. Aspects of human engineering and training devices will also be shown. The Acoustic Laboratory at the U.S. Naval School of Aviation Medicine will demonstrate the delayed side tone apparatus, pointing out the effectiveness of this device in speech intelligibility studies. The significance of aeromedical research will be illustrated through the presentation of the capabilities of the Aviation Medicine Acceleration Laboratory, as well as a live demonstration of the telemetering of physiological data which will be presented by the Naval Medical Research Institute. The latest advances in protective devices and other personal aircrew equipment will be shown to the public including a recent model of the Navy's full pressure suit. The Aeronautical Medical Equipment Laboratory at the Naval Air Material Center, Philadelphia, will be the coordinator of this exhibit and will utilize this opportunity to acquaint the large audience attending the National Air Show with the latest developments in airborne equipment.

It is suggested that any flight surgeons who will be in the Philadelphia area during the Labor Day weekend make an effort to attend this exhibit.

\* \* \* \* \*

Training Sheets

A series of articles on current aeromedical subjects has recently been called to the attention of the Aviation Medicine Division of BuMed. These "poop sheets" were prepared by Commander R. G. Witwer (MC) USN U.S. Marine Corps Air Station, Quantico, Va., and are issued on a monthly basis to disseminate information regarding aviation medicine to all the naval aviators aboard his station. Some of the subjects covered in these "poop sheets" are: "Temperature Variants in Aviation," "G's," "Noxious (Harmful) Gases in Aviation," "Sensations of Instrument Flight," et cetera.

This type of communication between a flight surgeon and his naval aviator seems to be an excellent idea and is well worth much consideration by all U.S. Navy flight surgeons.

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Annual Refresher Course in Physiological Training (?)

The following was taken from the Tactical Air Command Surgeon's Bulletin, Vol. V, No. 6, June 1955:

"II. Abstracts from Base AircREW Effectiveness, Reports - Hq Air Research and Development Command, Baltimore, Md.

In the Command AircREW Effectiveness Report for December 1954, it was noted that some pilots believed the annual refresher course in physiological training is unnecessary. In order to determine whether this opinion was widespread among the pilots, a letter was sent to all Flight Surgeons of the Command requesting them to interview a representative portion of aircREW members. This survey has been completed, and while there is no uniformity of opinion, the great majority of the men are satisfied with the training they receive. It was noted that the few men who felt the refresher course is being given too frequently are those who are doing a great deal of high altitude flying. This group usually consists of 3 or 4 men at each base. While the general comments concerning the requirement of an annual refresher course were favorable, the degree of enthusiasm varied, depending on where the training was being taken. The most common criticism pertained to the repetitive nature of the material presented. Those men with adverse comments feel that instead of receiving the standard basic course each year they should receive separate refresher courses which emphasize new equipment, techniques, and developments. Undoubtedly, a schedule of two types of physiological training courses is desirable. The primary course should provide the initial training of new men, and the second should be of an advanced nature designed to meet the needs of experienced aircREW members."

\* \* \* \* \*

Defects Noted on SF-88's and SF-89's Submitted to BuMed for June and July 1955

Excess copies .....	41
Lack of copies .....	26
Copies not legible .....	7
Original and copies dissimilar.....	16
Item 1    Name incomplete .....	1

Item 2	Error in designator .....	1
Item 5	Purpose omitted .....	2
Item 6	Date of examination omitted .....	2
Item 11	Unit omitted .....	1
Item 12	Date of birth omitted .....	15
Item 15	Examining facility omitted .....	1
Item 17	Aviators flight time omitted .....	46
Item 39	Failure to comply with instructions contained in the Manual of the Medical Department 16-35 (3).....	179
Item 44	No reason given for dental disqualification .....	1
Item 45	Urinalysis omitted in part or whole.....	17
Item 46	Chest x-ray omitted .....	108
Item 47	Results or date or both omitted .....	24
Item 51	Obvious errors in height .....	11
Item 52	Weight omitted .....	1
Item 52	Weight error .....	26
Item 57	Blood pressure omitted .....	8
Item 59	Distant vision omitted .....	4
Item 60	Refraction not properly recorded .....	7
Item 60	Refraction omitted on NavCad applicants .....	8
Item 62	Heterophoria omitted in full .....	5
Item 62	Left or right hyperphoria omitted .....	1
Item 62	P.D. at 13" omitted .....	14

Item 62	P. D. at 20' omitted .....	20
Item 62	P. C. and P. D. omitted .....	7
Item 63	Accommodation omitted .....	7
Item 64	Color vision omitted .....	1
Item 65	Depth perception omitted .....	22
Item 66	Field of vision omitted .....	9
Item 68	Red Lens test indicated but omitted .....	4
Item 69	Intraocular tension omitted .....	10
Item 70	Hearing omitted .....	3
Item 71	Audiometer omitted on NavCad applicants .....	10
Item 73	No reason given for hospitalization .....	9
Item 73	Not leaving space for BuMed endorsement .....	28
Item 73	Not enough detail on physical defects .....	140
Item 74	Left blank .....	89
Item 75	Left blank .....	119
Item 77	Failure to state aviator's service group.....	18
Items 79 through 82.	No signatures .....	4
Failure to evaluate on SF-89.....		40
Failure to complete item 21 on SF-89 .....		23
Lack of signature on SF-89 .....		3
<u>Total Number of Errors for June and July 1955 .....</u>		1139

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Full Pressure Suit

Starting in September, two aviation physiologists will be ordered to the Aeronautical Medical Equipment Laboratory for a six weeks' instruction course in the utilization, physiology, and fitting of the new full pressure suit. After completion of this course, these officers will form the nucleus of two teams of experts to be located at the Naval Air Stations, Norfolk and North Island, San Diego. These teams will be responsible for the indoctrination training of these fleet units which will be designated to use this full pressure suit. As the program expands, all physiological training units will be trained in the use of this suit. Many unique features of this suit require careful fitting, proper utilization, and a final low pressure chamber check.

An interim program, utilizing a total of 50 Navy modified partial pressure suits for use by test pilots and civilian contract test pilots is in operation at Gunter Air Force Base, Alabama.

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★ U. S. GOVERNMENT PRINTING OFFICE: 1954 O-361330

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